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Claim 94 (amended) An amino acid sequence comprising SEQ ID NO:2 or a functional equivalent of said amino acid sequence.

REMARKS

The Official Action of April 24, 2001 has been carefully considered and reconsideration of the application as amended is respectfully requested.

Claims 76, 86 and 87 have been amended more clearly to distinguish over the cited art as discussed below. Claims 93 and 94 have been amended to remove the basis for the rejections under 35 USC 112, second paragraph, appearing at paragraph 10 of the Official Action. In particular, the claims have been amended to make it clear that the term "functional equivalent thereof" relates only to the amino acid sequences defined by SEQ ID NOs: 1 and 2. Support for the recitations in these claims appears in the specification as filed at, for example, original claims 41 and 42.

Claims 86, 87 and 88 were rejected under 35 USC 102(b) as allegedly being anticipated by Schaller et al. The rejection is based upon the Examiner's assertion that the term "including at least one antibody" includes not only antibodies produced by the claimed method, but also the antibodies of Schaller et al.

Applicants have now amended claim 86 to delete the recitation "including at least one antibody", whereby the claim now requires that the recited antibody probe (and not just one

antibody from the probe) is produced by the claimed process. The term "antibody probe" is recognized by those of skill in the art to represent a sufficient number of antibody molecules to be effective as a probe. The amendment removes the basis for the rejection.

Claim 75, 76, 84, 85 and 89 - 92 stand rejected under 35 USC 102(b) as allegedly being anticipated by Faulds et al. Applicants respectfully traverse this rejection.

Applicants respectfully note that the rejection appears to be predicated on the contention that the invention requires the isolated antigen to be prepared using a sample of *Mycoplasma* taken from infection or lesion sites. However, as claimed, it is only the antibody producing cells raised in response to the *Mycoplasma* infection that produce the antibody probes which must originate from such sites. The *Mycoplasma* antigens from which the specific antigens are selected using the recited antibodies do not necessarily come from an infection or lesion site. So, for example, Example 1 in the specification employs a *Mycoplasma* antigen pool derived from an *in vitro* culture in Etheridge medium as starting material for the purification of specific antigen.

Since the isolated antigens which are the subject of claims 75, 76, 84, 85 and 89 - 92 are a very restricted species of the genus described by Faulds et al, and the claimed compounds cannot be immediately envisaged from such genus, Applicants respectfully submit that an anticipation cannot be found (see MPEP Section 2131.02).

Applicants also respectfully submit that the Examiner is incorrect when he states that the

claims are directed to any antigen from *Mycoplasma*. The antigens as claimed are specific antigens identified by specific antibody probes which manifest a short time after infection, and are thus limited by their method of preparation, as Applicants have pointed out previously.

The Examiner has also pointed out that Faulds et al also disclose a *Mycoplasma* antigen of 64kD, and that this anticipates claims 78 and 89 - 92. To remove the basis for this rejection, Applicants have removed reference to the 60 - 64 kD antigen from claim 76, and also from claim 87. The claims as amended are respectfully believed to be free of all basis for rejection over the cited art.

In view of the above, all rejections and objections of record are believed to have been successfully traversed and the application is believed to be in allowable form. An early Notice of Allowability is earnestly solicited and is believed to be fully warranted.

Respectfully submitted,

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Claim 76 (amended) An isolated antigen comprising a molecular structure that is identifiable with an antibody probe produced by harvesting an antibody from antibody producing cells of a mammal that are at or close to an infection or lesion site within a short time after said mammal is challenged by infection with *Mycoplasma hyopneumoniae* at said infection or lesion site, said molecular structure being a native *Mycoplasma hyopneumoniae* antigen having an approximate molecular weight in kilodaltons (kD) of between 110 - 114, 90 - 94, 72 - 75, ~~60 - 64~~, 52 -54 or 46 - 48, or being a mutant, derivative or fragment of the native antigen that stimulates production of the antibody in the antibody producing cells, wherein if the molecular structure is the native antigen having the molecular weight between 72 - 75 kD, the molecular structure contains an N-terminal amino acid sequence comprising SEQ ID NO:12, and wherein if the molecular structure has a molecular weight between 46 - 48 kD, the molecular structure has an N-terminal amino acid sequence comprising SEQ ID NO:3.

Claim 86 (amended) A method for preparing a synthetic antigenic polypeptide against *Mycoplasma*, which method comprises

(a) providing a cDNA library or genomic library derived from a sample of the *Mycoplasma*;

(b) providing an antibody probe ~~including at least one antibody~~ produced by

(i) providing a biological sample taken a short time after a mammal has been

challenged with the *Mycoplasma* or an extract comprising the *Mycoplasma* at an infection or lesion site, said sample being taken from the infection or lesion site or an area close to the infection or lesion site;

(ii) isolating antibody producing cells from the biological sample;

(iii) culturing the isolated cells *in vitro* in a suitable culture medium; and

(iv) harvesting the at least one antibody from said isolated cells;

(c) generating synthetic polypeptides from the cDNA library or genomic library;

(d) probing the synthetic polypeptides with the antibody probe to detect the synthetic antigenic polypeptide; and

(e) isolating the synthetic antigenic polypeptide detected thereby.

Claim 87 (amended) A method according to claim 86, wherein the at least one antibody is raised against an antigen from *Mycoplasma hyopneumoniae* or a related organism, said antigen being selected from the group of native *Mycoplasma* antigens having approximate molecular weights of 110 - 114, 90 - 94, 72 - 75, ~~60 - 64,~~ 52 - 54 and 46 - 48 kilodaltons (kD) or being a mutant, derivative or fragment of a native *Mycoplasma* antigen that stimulates production of the at least one antibody in said mammal.

Claim 93 (amended) An amino acid sequence ~~or functional equivalent thereof~~ encoded by a DNA fragment comprising SEQ ID NO:1 or a homolog thereof or a functional equivalent of said amino acid sequence.

Claim 94 (amended) An amino acid sequence ~~or functional equivalent thereof~~ comprising SEQ ID NO:2 or a functional equivalent of said amino acid sequence.